We present the Nordic Ionospheric Sounding rocket Seeding Experiment NISSE, which is a student research project to study the upper polar atmosphere. The project is conducted as a part of the REXUS BEXUS student rocket and balloon experiment program coordinated by the European Space Agency ESA Education Office, in which a sounding rocket REXUS 6 will be launched at the Esrange rocket range in Kiruna, Sweden, in March 2009.

In the NISSE experiment about 11 kg water will be released into the upper atmosphere at the REXUS 6 apogee altitude of about 95 km. The tri-static EISCAT UHF incoherent scatter radar system, which is located in Northern Fennoscandia, in Tromsø, Norway, Kiruna, Sweden, and Sodankylä, Finland, will be used for the detection and observation of the possible effects of the released water on the upper atmosphere and ionosphere.

In addition, the ESRAD MST radar and the riometer in Esrange will be monitoring the prevailing atmospheric/ionospheric conditions and possible perturbations close to the release region. Several magnetometers of the other experiment on the REXUS 6 rocket, AGADE by a German student team, will measure the geomagnetic field.

Besides the scientific objectives, the NISSE experiment has a strong educational aspect. Participation to the REXUS BEXUS program with an own rocket experiment gives for students of our team a unique opportunity to obtain experience in planning, building, and executing a scientific experiment in space physics, not forgetting experience of wide international scientific collaboration.